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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S)	:	Benco et al..
TITLE	:	**METHOD FOR RF DEAD ZONE DATA COLLECTION USING MOBILE STATION**
APPLICATION NO.	:	10/623,627
FILED	:	July 21, 2003
CONFIRMATION NO.	:	5178
EXAMINER	:	Doan, Phuoc Huu
ART UNIT	:	2687
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TRANSMITTAL OF APPEAL BRIEF UNDER 37 C.F.R.§41.37

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Respectfully submitted,

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February 9, 2006
Date

Kristi A. Murphy
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Docker No: LUTZ 2 00216

Benco 19-13-13-13

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APPEAL BRIEF

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Dear Sir:

Appellants submit this brief in connection with the appeal of the above-identified case.

I. Real Party in Interest (37 C.F.R. § 41.37(c)(1)(i))

The real party in interest in the present appeal is Lucent Technologies Inc., the assignee of the present application.

II. Related Appeals and Interferences (37 C.F.R. § 41.37(c)(1)(ii))

None.

III. Status of Claims (37 C.F.R. § 41.37(c)(1)(iii))

Claims 1-22 are pending in the application, with claims 1-18 standing rejected and with claims 19-22 being allowed. The rejection of claims 1-18 in the Final Office Action dated December 21, 2005 and continued in the Advisory Action dated January 27, 2006 is appealed.

IV. Status of Amendments (37 C.F.R. § 41.37(c)(1)(iv))

No claim amendments have been made subsequent to the final rejection.

V. Summary of Claimed Subject Matter (37 C.F.R. § 41.37(c)(1)(v))

The subject matter of pending claims 1-18 relates to data collection methods to identify an RF dead zone in a wireless network. Independent claim 1 and dependent claims 2-11 provide methods for collecting data to identify an RF dead zone in a cell of a wireless network using a mobile station (*e.g.*, mobiles 24, 40 in Appellants' Figs. 1 and 2, respectively). An example of such a method 100 is described in paragraphs 0034-0041 on pages 10 and 11 of the specification with respect to Fig. 3. The methods of independent claim 1 and corresponding dependent claims 2-11 include a base station (*e.g.*, base station 20 in Figs. 1 and 2) receiving position data from a powered up mobile station (*e.g.*, at 112 in Fig. 3, specification paragraph 0035), where the position data is sent by the mobile station in response to the mobile station determining that a received pilot strength measurement message is less than a predetermined threshold (*e.g.*, at 106 in Fig. 3, paragraph 0034), wherein the position data includes multiple coordinates indicating a location of the mobile station within the cell. Claim 1 further recites communicating the position data from the base station to a mobile switching center (*e.g.*, MSC 18 in Figs. 1 and 2) associated with the base station and the wireless network, as well as storing the position data (*e.g.*, at 116 in Fig. 3) in an RF dead zone network (*e.g.*, network 16 in Figs. 1 and 2) associated with the wireless network.

Dependent claim 2 provides that the receiving step is performed whether or not the mobile station is connected to an incoming or outgoing call (paragraph 0036). Claim 3 recites that the steps of claim 1 are periodically repeated while the mobile station is powered up and located within the cell (*e.g.*, paragraphs 0026 and 0036, events 104-112 in Fig. 3). Claim 4 specifies that the multiple coordinates include an X coordinate and a Y coordinate associated with a surface area of the cell (*e.g.*, paragraphs 0026 and 0035), and claim 5 provides that the coordinates include a Z coordinate associated with an altitude within the cell (*e.g.*, paragraph 0026). As set forth in dependent claim 6, the RF dead zone network includes an RF dead zone database (*e.g.*, database 28 in Figs. 1 and 2), wherein the position data is stored in the RF dead zone database. In the method of dependent claim 7, the RF dead zone

network further includes a data network (*e.g.*, network 26 in Figs. 1 and 2), an RF dead zone data processor (*e.g.*, 30), and an output device (*e.g.*, 32).

The method of dependent claim 8 also includes receiving information from at least three RF transmitting devices (*e.g.*, 108 in Fig. 3, paragraph 0034), determining the multiple coordinates forming the position data from the received information at the powered-up mobile station (*e.g.*, 110), and transmitting the position data to the base station (*e.g.*, 112 in Fig. 3). In claim 9, the method further includes receiving a pilot strength measurement message from the base station at the powered-up mobile station (*e.g.*, 104 in Fig. 3), and determining that the received pilot strength measurement message is less than a predetermined threshold (*e.g.*, 106 in Fig. 3, paragraph 0034). In the method of dependent claim 10, the RF transmitting devices include the base station and at least two additional base stations associated with the wireless network (*e.g.*, base stations 22 in Fig. 1), and in claim 11, the RF transmitting devices include satellites associated with a global positioning system satellite constellation (satellites 42 in Fig. 2).

Independent claim 12 involves a method (*e.g.*, paragraphs 0034-0041, Fig. 3) for collecting data to identify an RF dead zone in a wireless network using a mobile station (*e.g.*, mobile 24, 40 in Figs. 1 and 2), wherein the wireless network provides wireless service to a geographic area comprised of a plurality of cells, wherein the wireless network includes a plurality of base stations (*e.g.*, base stations 20, 22 in Figs. 1 and 2) corresponding to the plurality of cells. The method of claim 12 includes receiving position data from a powered up mobile station (*e.g.*, at 112 in Fig. 3, specification paragraph 0035) at a base station (*e.g.*, base station 20 in Figs. 1 and 2), where the position data is sent by the powered up mobile station when the mobile determines that a received pilot strength measurement message is less than a predetermined threshold (*e.g.*, at 106 in Fig. 3, paragraph 0034), wherein the position data includes multiple coordinates indicating a location of the mobile station within the network. The method also includes communicating the position data from the base station to a mobile switching center (*e.g.*, MSC 18 in Figs. 1 and 2) associated with the base station and the wireless network, as well as storing the position data (*e.g.*, at 116 in Fig. 3) in an RF dead zone network (*e.g.*, network 16 in Figs. 1 and 2) associated with the wireless network.

The receiving step in dependent claim 13 (*e.g.*, 112 in Fig. 3) is performed whether or not the mobile station is connected to an incoming or outgoing call. In the method of dependent claim 14, the above mentioned steps are periodically repeated (*e.g.*, paragraphs 0026 and 0036, events 104-112 in Fig. 3) while the mobile station is powered up and located within the geographic area associated with the wireless network. In claim 15, the method also includes receiving, at the powered-up mobile, information from at least three RF transmitting devices (*e.g.*, 108 in Fig. 3, paragraph 0034), determining the multiple coordinates forming the position data from the received information at the powered-up mobile station (*e.g.*, 110), and transmitting the position data to the base station (*e.g.*, 112 in Fig. 3). Dependent method claim 16 further provides receiving a pilot strength measurement message from the base station at the powered-up mobile station (*e.g.*, 104 in Fig. 3), as well as determining that the received pilot strength measurement message is less than a predetermined threshold (*e.g.*, 106 in Fig. 3, paragraph 0034). In the method of dependent claim 17, the multiple coordinates include an X coordinate and a Y coordinate associated with the geographic area of the wireless network (*e.g.*, paragraphs 0026 and 0035). The method of claim 18 provides that information is received from at least four RF transmitting devices and the multiple coordinates include a Z coordinate associated with an altitude associated with the geographic area of the wireless network (*e.g.*, paragraph 0026).

VI. <u>Grounds of Rejection to be Reviewed on Appeal (37 C.F.R. §41.37(c)(1)(vi))</u>

A. Whether claims 1-18 are unpatentable under 35 U.S.C. § 103 as being obvious in view of Haymes 6,751,443 in combination with Oh 6,714,789.

VII. <u>Argument (37 C.F.R. § 41.37(c)(1)(vii))</u>

<u>Rejection under 35 U.S.C. § 103 over Haymes 6,751,443 in view of Oh 6,714,789</u>

Claims 1-18 stand rejected under 35 U.S.C. §103 as being obvious in view of Haymes 6,751,443 in combination with Oh 6,714,789. Appellants submit that no *prima facie* case of obviousness has been asserted, and that claims 1-18 are patentably distinct from the proposed combination of Haymes and Oh because the proposed combination fails to teach or suggest all the elements of the rejected claims. Moreover,

no suggestion or motivation exists for the proposed combination. Appellants therefore request reversal of the rejections thereof under 35 U.S.C. § 103 in view of the following arguments with respect to the indicated claims or groups thereof.

<u>Claims, 1, 3-7, 10, and 11</u>

Independent claim 1 involves a method for collecting data to identify an RF dead zone in a cell of a wireless network using a mobile station. Claim 1 includes receiving, at a base station associated with a cell, position data from a powered up mobile station located within the cell, where the position data is sent in response to the mobile station determining that a received pilot strength measurement message is less than a predetermined threshold, and where the position data includes multiple coordinates indicating a location of the mobile station within the cell. In addition, claim 1 recites communicating the position data from the base station to a mobile switching center associated with the base station and the wireless network, and storing the position data in an RF dead zone network associated with the wireless network. Rejected claims 3-7, 10, and 11 depend from independent claim 1. These claims have been rejected as obvious over the combination of Haymes 6,751,443 (hereinafter "Haymes") in view of Oh 6,714,789 (hereinafter "Oh").

Appellants submit that no prima facie showing of obviousness has been set forth, wherein these references, whether individually or in combination, fail to teach or suggest all the elements of independent claim 1 and the corresponding dependent claims 3-7, 10, and 11. A prima facie case of obviousness under 35 U.S.C. § 103 requires a showing of some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or to combine reference teachings. In addition, there must be a reasonable expectation of success in attempting the proposed combination/modification. Moreover, the modified or combined reference(s) must teach or suggest all the claim limitations. Thus, where none of the cited references of a proposed combination teach a single claim element or limitation, there is no prima facie case of obviousness. See MPEP § 706.02(j) and MPEP § 2143, 2143.03 citing to <u>In re Royka</u>, 490 F.2d 981, 180 U.S.P.Q. (BNA) 580 (CCPA 1974), and <u>In re Wilson</u>, 424 F.2d 1382, 165 U.S.P.Q. (BNA) 494 (CCPA 1970).

Appellants submit that neither Haymes nor Oh teach or suggest receiving position data sent by a mobile station in response to the mobile station determining that a received pilot strength measurement message is less than a predetermined threshold, where the position data includes multiple coordinates indicating a location of the mobile station within the cell, as recited in independent claim 1. As a result, no prima facie case of obviousness has been asserted, and the rejected claims 1, 3-7, 10, and 11 are patentably distinct from the proposed combination of Haymes with Oh. For this reason, Appellants request that the rejections of these claims be reversed.

Haymes does not disclose this step a) of claim 1, as acknowledged on pages 2 and 3 of the final Office Action dated December 21, 2005. Instead, Haymes provides a controller 200 that knows the position of a user 250, and includes this information in an error message (Fig. 2; col. 3, lines 19-34), or a GPS equipped mobile unit 320 that includes position information in an error message (Fig. 3; col. 4, lines 40-46), wherein Appellants have found no teaching or suggestion in Haymes for sending position information in response to the mobile station determining that a pilot signal strength message is below a threshold. Appellants note that the Advisory Action dated January 27, 2006 states on page 3:

> Examiner's response: based on Applicant's specification in page 12, par. [0045-0046] to defined the claim invention above. Haymes cited the same scope of invention such as the collected data the collected data form a database which is analyzed to generate coverage maps "Abstract" database are stored the error by transmit and receive between the mobile station and base station in particularly determining the actual level of service obtained for the mobile network; and a database form a map of **dead zones** (col. 6, lines 2-12).
>
> In the fundamental of wireless communication system, if mobile device turn of the power, at the base station and MSC "mobile switching center" which control channel never determined the position of mobile device. **Haymes, and Oh are considering the mobile device was power on at the time.**
>
> Haymes discloses when the number of error packets exceeds a predetermined threshold value is equivalence that **"is less than a predetermined threshold" (col. 5, lines 10-30)**, also see Applicant's specification in page 11, par. [0038-0040]).

(Advisory Action, page 3, emphasis in original). Appellants note for the record that the present invention is set forth in the claims, and is in not defined or limited in any way by any given portion of Appellants' specification. Furthermore, Appellants note that the teaching, suggestion, or motivation for modifying a reference or combining references must come from the prior art and not from Appellants' specification (See MPEP §2143 citing to In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d (BNA) 1438 (Fed. Cir. 1991)).

Assuming the above referenced portion of the Advisory Action was intended to allege some sort of "equivalence" between determining that a received pilot strength measurement message is less than a predetermined threshold in claim 1, and the teachings of Haymes, Appellants submit that the test for obviousness is not an "equivalence" standard. Nevertheless, Appellants note that the cited portion of Haymes indeed indicates that the mobile (member) enters an error reporting mode and provides its location to the base station in an error message when the number of packet errors in a packet window exceeds a predetermined threshold value (col. 5, lines 22-30). Appellants submit, however, that this portion, and the remainder of Haymes neither teaches nor suggests that position data is sent from a mobile to a base station in response to the mobile station determining that a received pilot strength measurement message is less than a predetermined threshold. In this regard, the background section of the Haymes reference itself indicates that error rates are a function of many variables, such as changing interference generators, communication channel frequency (*e.g.*, col. 1, lines 14-40), and does not appear to teach any "equivalence" between error rates and a received pilot strength measurement message, nor is the error rate believed to be related to pilot strength measurement messages, but rather appears to be based on errors in data packets. Thus, Appellants submit that Haymes does not teach or suggest step a) of claim 1, as acknowledged in the final Office Action of December 21, 2005.

With respect to the secondary reference Oh, the final Office Action asserts at page 3 that Oh teaches this step, citing to Oh col. 5, lines 41-60, and col. 6, lines 44-49. Col. 5, lines 41-62 of Oh provides:

> Further, in a CDMA system, each physical sector in the cell is distinguished by a PN offset, which defines a sector-specific part of a pseudo-random number. Communications between a mobile station and the BTS on a given channel, in a given physical sector,

> and on a given carrier frequency, are encoded using the Walsh code of the channel and the PN offset of the physical sector and are then carried on the carrier frequency. Details of the mechanics involved in this coding and communication are well known to those of ordinary skill in the art and are therefore not described here.
>
> The pilot channel may be used for establishing signal timing and conveying signal strength measurements to facilitate handoff between sectors. In particular, via the pilot channel, a mobile station may monitor the strength of signals coming from the sector in which it is operating and coming from neighboring sectors, and a network entity (such as a switch or the mobile station itself) may maintain a neighbor list indicating which sectors have signals strengths high enough that the sectors are able to serve the mobile station. That neighbor list is traditionally used to decide when to hand off a mobile station from one cell site to another.

(Oh, col. 5, lines 42-62). This portion of the Oh reference does not teach or in any way suggest the mobile station sending position data in response to the mobile station determining that a received pilot strength measurement message is less than a predetermined threshold. Rather, the cited paragraphs merely indicate that the mobile station may monitor the strength of signals coming from its current sector and neighboring sectors, and may maintain a neighbor list. Also, this portion of Oh does not mention the mobile station determining that a received pilot strength measurement message is less than a predetermined threshold.

The Office Action in this regard also cites to col. 6, lines 44-49 of Oh, reproduced below:

> Typically, as the mobile station in this example moves from physical sector 30c into physical sector 34a, the signal strength of physical sector 30c will decrease and the signal strength of physical sector 34a will increase. By convention, the mobile station may therefore ask the system to switch the mobile station over to communication with physical sector 34a instead from physical sector 30c, and a network entity (such as an MSC) in the system may then orchestrate the handoff. Alternatively, an MSC or other network entity may autonomously orchestrate the handoff, based on signal strength measurements.

(Oh, col. 6, lines 44-54). This portion of Oh merely describes the mobile station asking the system to perform a handoff operation, but in no way teaches or suggests that the

mobile station determines that a pilot signal strength message is less than a threshold and sends position data to a base station in response thereto.

Appellants also note that the remainder of Oh does not appear to teach this claim element. In this regard, the only indications Applicants have found in Oh regarding the timing of mobile station's location reporting are at col. 3, lines 26-33 and col. 8, line 61 through col. 9, line 17, at which Oh states:

> For example, each mobile station operating within the MSC's serving system may be equipped with a position-determining system and may be programmed to use the position-determining system to determine its own location coordinates. ***Each mobile station may then be programmed to report its own location***, directly or through one or more other network entities (e.g., a mobile positioning center (MPC)), ***to the MSC***. The mobile station may be programmed to report its location periodically (e.g., every 10-30 ms, for instance) ***or in response to a designated stimulus (e.g., a request from the MSC or another network entity)***.
>
> In this regard, the well known GPS system currently provides very granular location determination and may provide even greater granularity in the future. Therefore, in an exemplary embodiment, the mobile station may include a GPS transceiver by which it may receive its location coordinates. Preferably, the GPS transceiver provides the mobile station with a substantially continuous or periodic reading of the latitude and longitude coordinates of the mobile station. ***A processor in the mobile station may then be programmed to periodically (e.g., every several seconds) report the mobile station's location directly or indirectly to the MSC.***

(Oh, col. 8, line 61 through col. 9, line 17, emphasis added). Therefore, while Oh does teach sending position information periodically, or in response to a request, there is no teaching or suggestion that this information is sent in response to a determination of the pilot signal measurement message being less than a predetermined threshold.

As neither Haymes nor Oh teach position data being sent by a mobile station in response to the mobile station determining that a received pilot strength measurement message is less than a predetermined threshold, no prima facie showing of obviousness has been asserted and Appellants request reversal of the rejection of claims 1, 3-7, 10, and 11, since the proposed combination fails to teach or suggest all the features of the claimed invention. In addition, these references fail to provide any suggestion or motivation for modification of one or both these references in accordance

with claim 1, whereby reversal of the rejections of claims 1, 3-7, 10, and 11 is requested for this additional reason under 35 U.S.C. § 103.

Claim 2

Method claim 2 depends from independent claim 1, and is therefore believed to be patentably distinct from the proposed combination of Haymes with Oh for the reasons set forth in connection with independent claim 1 *supra*. In addition, claim 2 provides that the receiving step is performed whether or not the mobile station is connected to an incoming or outgoing call. With respect to claim 2, the final Office Action of December 21, 2005 cites to Haymes col. 2, lines 30-37. This portion of Haymes provides:

> In a particular embodiment, mobile stations and/or the service provider periodically compare their current location with the maps. In this case the mobile unit and/or the service provider can anticipate connection problems at the particular user location. In some cases the service provider notifies the end user of a particular channel to use in the particular location for best communication.

(Haymes col. 2, lines 30-37). This portion of Haymes appears unrelated to claim 2, and thus fails to provide a prima facie showing of obviousness. Furthermore, this referenced portion of Haymes fails to provide suggestion or motivation for the features of dependent claim 2, whereby Appellants submit that no prima facie showing of obviousness has been asserted under 35 U.S.C. §103. Appellants therefore request reversal of the rejection of claim 2 for this additional reason, as well as for the reasons set forth above with respect to independent claim 1.

Claims 8 and 9

Claim 9 depends from claim 8, which in turn depends from independent claim 1, whereby these claims are believed to be patentably distinct from the proposed combination of Haymes with Oh for the reasons set forth in connection with independent claim 1 *supra*. The method of claim 8 further includes, before step a) of claim 1, receiving information from at least three RF transmitting devices at the

powered-up mobile station, determining the multiple coordinates forming the position data from the received information at the powered-up mobile station, and transmitting the position data to the base station at the powered-up mobile station. The proposed combination of Haymes with Oh fails to teach all the elements of claim 8, whereby reversal of the rejections of claims 8 and 9 is also requested for this additional reason.

In the final Office Action of December 21, 2005, reference is made to col. 3, lines 1-10 of Haymes regarding step d) of claim 8 (at the powered-up mobile station, receiving information from at least three RF transmitting devices). This portion of Haymes is reproduced below:

> When any of the base stations receive an error message, it alerts the other base stations of the error condition. In some cases, all the base stations automatically or manually search for the mobile user sending out the error message. In one embodiment, the user reporting the error enters an error reporting mode, and stays in that mode until it receives an error report acknowledge from a base station or until a timeout occurs the base stations employ a moveable directional antenna to traverse an arc and locate the direction of greatest signal strength from the user reporting the error. When three (or more) base stations have established the direction, a triangulation algorithm is used to calculate the exact location of that mobile user. The base station closest or the one receiving the highest signal strength level from that user to that user, transmits an acknowledgment to the mobile unit, and the reporting mobile unit exits the error reporting mode. In some cases there is a constantly updated data base that contains records of all error messages. This data base is processed to extract recurring error trends. This includes locations that are dead zones for one or more communicating channel frequencies in combination with particular time of day that are problematic.

(Haymes, col. 2, line 58 through col. 3, line 13). This portion of Haymes does not teach or suggest the powered-up mobile receiving information from at least three RF transmitting devices and determining the multiple coordinates forming the position data from the received information, but rather indicates that three base stations of Haymes attempt to triangulate the location of the error-reporting mobile. In this regard, the mobile is not receiving information from the base stations, but instead, the base stations are listening to the error messages from the mobile. Appellants submit that no prima facie showing of obviousness has been established with regard to claims 8 and 9,

whereby these claims are patentably distinct from Haymes and Oh for this additional reason. Appellants therefore request reversal of the rejections of claims 8 and 9 under 35 U.S.C. § 103 for this reason, and also for the reasons set forth above in the discussion of claim 1.

Claims 12 and 14

Independent claim 12 is directed to a method for collecting data to identify an RF dead zone in a wireless network using a mobile station, including the step a) of at a base station, receiving position data from a powered up mobile station where the position data is sent by the powered up mobile station when the mobile station determines that a received pilot strength measurement message is less than a predetermined threshold. As discussed above in connection with independent claim 1, and as acknowledged at page 6 of the final Office Action of December 21, 2005, Haymes does not teach or suggest this element of claim 12 and the associated dependent claims 13-18. With respect to the Advisory Action of January 27, 2006, Appellants reiterate the above discussion and submit that the teachings in Haymes in which a mobile sends an error message with location information to the base station when the number of packet errors in a packet window exceeds a predetermined threshold value (col. 5, lines 22-30) do not teach or suggest that position data is sent from a mobile to a base station when the mobile determines that a received pilot strength measurement message is less than a predetermined threshold. In addition, Appellants note that the Oh reference also fails to teach or suggest this element of independent 12. In this regard, the final Office Action of December 21, 2005 cites again to Oh col. 5, lines 41-60 and col. 6, lines 44-49 (reproduced above), but these portions are unrelated to the mobile sending position data to the base station when it determines that a pilot signal strength message is less than a threshold. As neither reference, nor the proposed combination thereof appears to teach or in any way suggest this feature, claims 12 and 14 are non-obvious, and reversal of the rejections thereof is requested under 35 U.S.C. § 103.

Claim 13

Claim 13 depends from claim 12, and thus is believed to be patentably distinct from the proposed combination of Haymes with Oh for the reasons set forth in connection with independent claim 12 above. Claim 13 further provides that the receiving step is performed whether or not the mobile station is connected to an incoming or outgoing call. The final Office action refers to the rejection of claim 2 in addressing claim 13. However, as set forth above, the portion of Haymes cited in the rejection of claim 2, i.e., Haymes col. 2, lines 30-37 (reproduced above) appears unrelated to claim 13, and thus fails to provide a prima facie showing of obviousness. Furthermore, this referenced portion of Haymes fails to provide suggestion or motivation for the features of dependent claim 13, whereby Appellants submit that no prima facie showing of obviousness has been asserted under 35 U.S.C. § 103 with respect to claim 13, and reversal of the rejection thereof is requested for this additional reason.

Claims 15-18

Claim 15 depends from claim 12, with claims 16-18 depending from claim 15, whereby these claims are patentably distinct from the proposed combination of Haymes with Oh for the reasons set forth in the discussion of claim 12 above. In addition, claim 15 further recites, before step a) of claim 12, receiving information from at least three RF transmitting devices at the powered-up mobile station, and determining the multiple coordinates forming the position data from the received information at the powered-up mobile station. Appellant in this regard refers to the above discussion of claims 8 and 9, and notes that the reference in the final Office Action to col. 3, lines 1-10 of Haymes fails to teach or suggest the powered-up mobile receiving information from at least three RF transmitting devices and determining the multiple coordinates forming the position data from the received information. Rather, this citation in Haymes merely indicates that three base stations attempt to triangulate the location of the error-reporting mobile by listening to the error reports from the mobile. Thus, no prima facie showing of obviousness has been presented with respect to claims 15-18 and reversal of the rejections thereof is requested under 35 U.S.C. § 103 for this reason, and also for the reasons set forth above in the discussion of independent claim 12 above.

CONCLUSION

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1-18 be reversed.

Respectfully submitted,

FAY, SHARPE, FAGAN,
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2/9/06
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Date Feb. 9, 2006	**Printed Name** **Kristi A. Murphy**

VIII. Appendix of Claims (37 C.F.R. § 41.37(c)(1)(viii))

1. A method for collecting data to identify an RF dead zone in a cell of a wireless network using a mobile station, the method including the steps:

a) at a base station associated with a cell, receiving position data from a powered up mobile station located within the cell, the position data sent by the mobile station in response to the mobile station determining that a received pilot strength measurement message is less than a predetermined threshold, wherein the position data includes multiple coordinates indicating a location of the mobile station within the cell;

b) communicating the position data from the base station to a mobile switching center associated with the base station and the wireless network; and

c) storing the position data in an RF dead zone network associated with the wireless network.

2. The method as set forth in claim 1 wherein the receiving step is performed whether or not the mobile station is connected to an incoming or outgoing call.

3. The method as set forth in claim 1 wherein steps a) through c) are periodically repeated while the mobile station is powered up and located within the cell.

4. The method as set forth in claim 1 wherein the multiple coordinates include an X coordinate and a Y coordinate associated with a surface area of the cell.

5. The method as set forth in claim 4 wherein the multiple coordinates include a Z coordinate associated with an altitude within the cell.

6. The method as set forth in claim 1 wherein the RF dead zone network includes an RF dead zone database, wherein the position data is stored in step c) is stored in the RF dead zone database.

7. The method as set forth in claim 1 wherein the RF dead zone network further includes a data network, an RF dead zone data processor, and an output device.

8. The method as set forth in claim 1, before step a), further including:

d) at the powered-up mobile station, receiving information from at least three RF transmitting devices;

e) at the powered-up mobile station, determining the multiple coordinates forming the position data from the received information; and

f) at the powered-up mobile station, transmitting the position data to the base station.

9. The method as set forth in claim 8, before step d), further including:

g) at the powered-up mobile station, receiving a pilot strength measurement message from the base station; and

h) determining that the received pilot strength measurement message is less than a predetermined threshold.

10. The method as set forth in claim 1 wherein the RF transmitting devices include the base station and at least two additional base stations associated with the wireless network.

11. The method as set forth in claim 1 wherein the RF transmitting devices include satellites associated with a global positioning system satellite constellation.

12. A method for collecting data to identify an RF dead zone in a wireless network using a mobile station, wherein the wireless network provides wireless service to a geographic area comprised of a plurality of cells, wherein the wireless network includes a plurality of base stations corresponding to the plurality of cells, the method including the steps:

a) at a base station associated with a first cell of the plurality of cells, receiving position data from a powered up mobile station located within the first cell, the position data being sent by the powered up mobile station when the mobile station determines that a received pilot strength measurement message is less than a predetermined threshold, wherein the position data includes multiple coordinates indicating a location of the mobile station within the wireless network;

b) communicating the position data from the at least one base station to a mobile switching center associated with the at least one base station and the wireless network; and

c) storing the position data in an RF dead zone database associated with the wireless network.

13. The method as set forth in claim 12 wherein the receiving step is performed whether or not the mobile station is connected to an incoming or outgoing call.

14. The method as set forth in claim 12 wherein steps a) through c) are periodically repeated while the mobile station is powered up and located within the geographic area associated with the wireless network.

15. The method as set forth in claim 12, before step a), further including:

d) at the powered-up mobile station, receiving information from at least three RF transmitting devices;

e) at the powered-up mobile station, determining the multiple coordinates forming the position data from the received information; and

f) at the powered-up mobile station, transmitting the position data to the at least one base station.

16. The method as set forth in claim 15, before step d), further including:

g) at the powered-up mobile station, receiving a pilot strength measurement message from the base station; and

h) at the powered-up mobile station, determining that the received pilot strength measurement message is less than a predetermined threshold.

17. The method as set forth in claim 15 wherein the multiple coordinates include an X coordinate and a Y coordinate associated with the geographic area of the wireless network.

18. The method as set forth in claim 17 wherein step d) includes receiving information from at least four RF transmitting devices and the multiple coordinates include a Z coordinate associated with an altitude associated with the geographic area of the wireless network.

19. A method for collecting data to identify an RF dead zone in a wireless network using a plurality of mobile stations, wherein the wireless network provides wireless service to a geographic area comprised of a plurality of cells, wherein the wireless network includes a plurality of base stations corresponding to the plurality of cells, the method including the steps:

at each powered-up mobile station:

a) receiving a pilot strength measurement message from the base station; and

b) determining that the received pilot strength measurement message is less than a predetermined threshold;

c) receiving information from at least three RF transmitting devices;

d) determining the multiple coordinates forming the position data from the received information; and

e) transmitting the position data to the at least one base station;

at one or more base stations:

f) receiving position data from each powered-up mobile station whether or not any of the powered-up mobile station is connected to an incoming or outgoing call, the one or more base stations corresponding to one or more cells in which any of the powered-up mobile stations are located, wherein the position data from each powered-up mobile station includes multiple coordinates indicating a location of the powered-up mobile station within the wireless network; and

g) communicating the position data to one or more mobile switching centers associated with the one or more base stations and the wireless network; and

at one or more mobile switching centers:

h) storing the position data received from the one or more base stations in an RF dead zone database associated with the wireless network.

20. The method as set forth in claim 19 wherein steps a) through h) are periodically repeated for each powered-up mobile station located within the geographic area associated with the wireless network.

21. The method as set forth in claim 20, further including:

i) receiving a request for an RF dead zone output report from a wireless service provider associated with the wireless network;

j) retrieving position data from the RF dead zone database in response to the report request;

k) processing the retrieved position data according to the report request; and

l) communicating the requested RF dead zone output report to the wireless service provider.

22. The method as set forth in claim 21, the method further including:

m) using the RF dead zone output report to create an improved wireless network design with improved RF coverage in at least one dead zone area of the wireless network; and

n) re-configuring the wireless network according to the improved wireless network design.

IX. Evidence Appendix (37 C.F.R. § 41.37(c)(1)(ix))

none

X. Related Proceedings Appendix (37 C.F.R. § 41.37(c)(1)(x))

none